PYTHON FOR COMPUTATIONAL PROBLEM SOLVING

Team Python

Department of Computer Science and Engineering

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Unit - 3:Functions – Definition and Call

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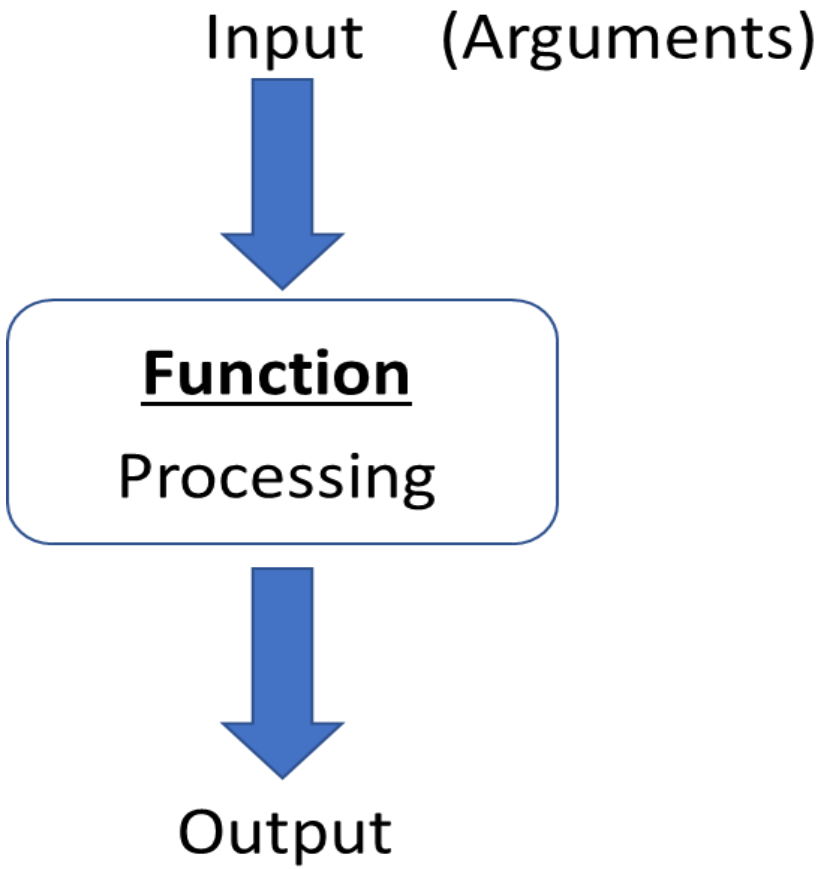
What are functions

- A function is a self contained block of code that performs a specific task
- Functions ideally take input, performs a set of operations and computes an output

Functions



Types of functions:

- Built-in –existing functions
- User defined-defined by user

Functions

The advantages of using functions are:

- Reducing duplication of code
- Supports modularity
- Improving clarity of the code
- Promotes reuse of code
- Enhances readability
- Debugging and maintenance becomes easier

Function Definition:

A function has two parts – leader and suite

- The leader starts with the keyword ***def***
- then the function name
- function name is an identifier that starts with alphabets [a-z or A-Z] or _ and then followed by any number of letter of English or _ or digit
- followed by a pair of round parentheses then a colon
- then the suite follows – suite can have any valid statement of Python including another function definition

Functions

Function Definition:

Syntax:

```
def  function_name(parameters):
        suite
```

Function must be defined preceding their usage

Defining Functions: Example

Example 1:

```
#program to display a greeting message

def display() :
      print("hello")
 print("python")
 display()
 print("program")
```

Output:

```
python
hello
Program
```

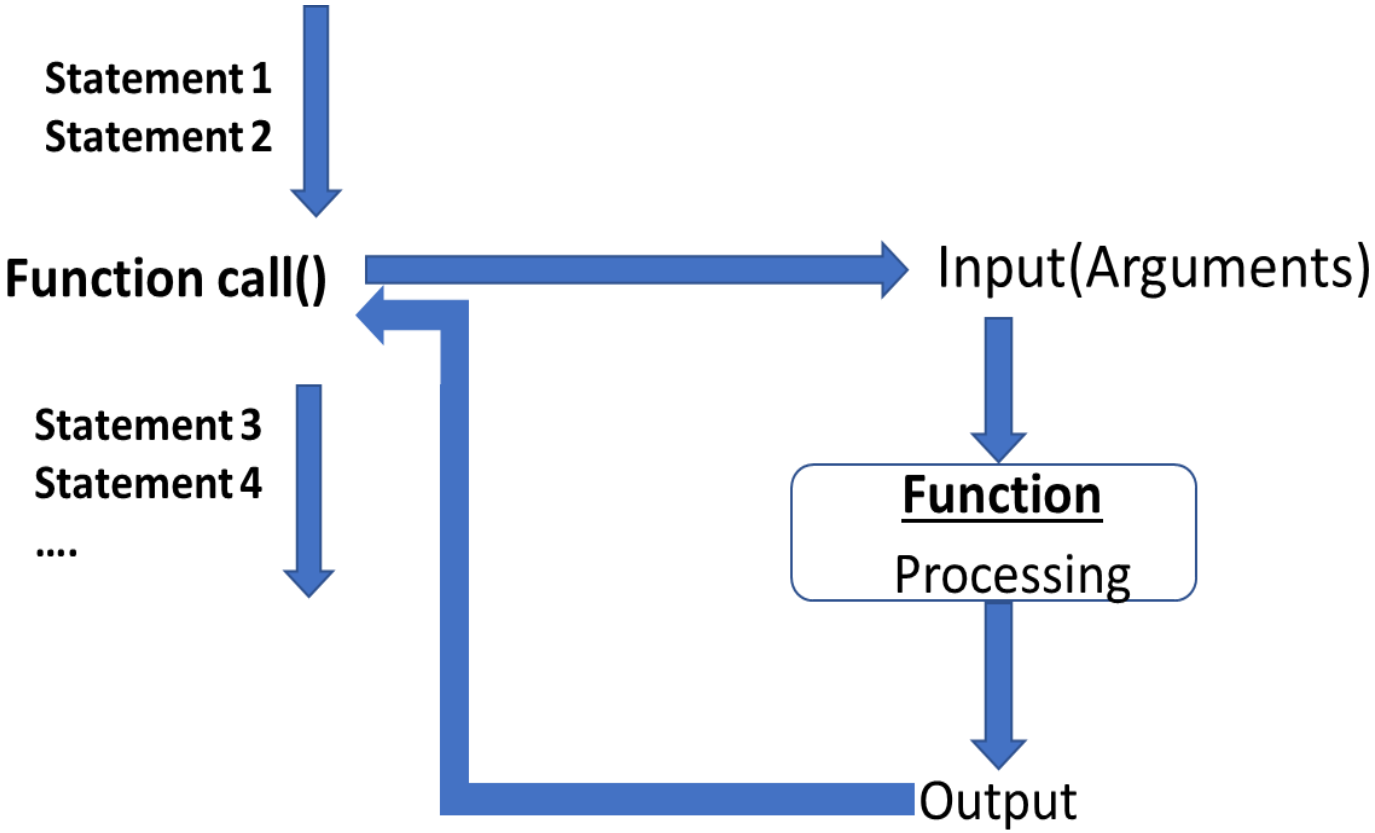
Processing of Functions

- when the function is defined, header or the leader is processed, the user is provided a name or a handle which is the same as the function name.
- A function entity with the function name in the definition along with the suite is stored.
- Each entity in Python has a reference count.
- At this point of translation, only leader is processed and the suite is not processed.

Function : Call

- Name of the function followed by parentheses causes a function call
- This results in transfer of control to the leader of the function and then the suite is executed
- After that the control comes back to the point after the function call in the user's code.
- A pair of round parenthesis () is called a function call operator.

Function : Call



Function : Summary

Example 2:

```
def display() :
        print("hello")
print("python")
display()
print("program")
display1=display #assigning the function entity another name
#at this point the reference count of the function entity is up by 2
del display #ref count reduces by 1
display1() #still works
```

- Hands on session

Function : Summary

User defined function

- Is a self contained block of code which is designed to solve a specified task
- Reduces the complexity of the program through modularity
- Improves the readability, enhances the clarity of the program
- Debugging becomes easier

THANK YOU

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